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ABSTRACT

The purpose of this study was to assess the effects of a 12-week intervention in 6 black and 9 white low income homes in order to modify maternal teaching behavior and influence child functioning. Home visitors worked with the mothers once a week mainly utilizing objects and events in the home for educational purposes. It was hypothesized that a home-visitor program directed toward the mother would improve her maternal teaching behavior and have effects on the cognitive functioning of her preschool-aged child. Measuring instruments used in a pre-test and post-test situation were the Stanford-Binet, Form L-M; the DARCEE Concept Test; and in a post-test only design, the Maternal Teaching Style Instrument (MTSI). Positive changes in maternal teaching style were achieved by experimental group mothers, especially in the area of cue labeling. Significant cognitive gains were achieved by the preschool target children on recognition skills on the DARCEE Concept Test while all other differences were in the predicted direction but statistically insignificant. The limited changes in the target children were attributed to the limited duration of the intervention. (MS/Author)

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THE EVALUATION OF A HOME-BASED EDUCATIONAL INTERVENTION FOR PRESCHOOLERS AND THEIR MOTHERS[1]

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PROBLEM

The national Home Start Program has been undertaken recently to determine the feasibility of home-based early childhood intervention as one alternative to center-based programs.(8) The present study derived from some of the earliest work in this area conducted by the Demonstration and Research Center for Early Education (DARCEE).(1,6) Reported herein is a recent DARCEE study on the effects of a brief home-visitor program on low-income mothers and their children.

The DARCEE work and the Home Start effort are consistent with the increasing attention which has been paid to the parent, especially the mother, as an educational change agent.(3,10) This represents a change in focus from the exclusive emphasis on classroom programs conducted by professionals to the importance of the parents and the potential influence on them by home visitors, often of paraprofessional status.(1)

It was hypothesized that a home-visitor program directed toward the mother would improve her maternal teaching behavior(11) and have effects on the cognitive functioning of her preschool aged child.

METHOD

Subjects

Eighteen mother-child pairs were selected from two urban, low-income housing projects in Nashville (9 pairs from a predominantly white project and 9 pairs from a predominantly black project). Stratified random sampling was used to assign subjects to experimental and comparison groups, with stratification on Stanford-Binet IQ scores and race, in the following manner: White and black groups were separately stratified into high, medium, and low IQ groups, and then randomly assigned to either the experimental or the comparison group. Three pairs were lost due to attrition, e.g., the family moved out of the project or the mother's work hours changed, thus leaving 15 pairs. The final grouping was as follows: (1) experimental group--6 focal subjects, 3 male and 3 female, 4 white and 2 black; (2) comparison group--9 focal subjects, 7 male and 2 female, 5 white and 4 black.

The mean age of the children at the beginning of the study was 43.2 months, with a standard deviation (SD) of 3.2, and their average Stanford-Binet IQ was 92.7 (SD=12.6). The mothers had an average of 8.8 years of education (SD=2.3) and a mean age of 28.3 years (SD=9.2).

Procedure

Teams consisting of one black and one white female researcher compiled lists from housing project files of families with children of appropriate age. The teams then interveiwed the families, explained the study, and wrote observations about each family.

At this interview, the fact that there would be a payment of six dollars for participating in each testing session was explained and consent of mothers for participation was sought. The home visitor, a black female, then visited the families and set up home visit schedules for those families who were selected for the treatment group. Comparison families were told of their group assignment and of the pretest and posttest times. The home visitor visited each treatment family once a week for 12 weeks--the visits usually lasted about an hour. During this time the home visitor worked with both the mother and child in an attempt to teach the mother to be a more effective educational change agent for her child. Behavior modeling and demonstration of materials were two of the techniques employed. Materials were sometimes furnished by the home visitor, but the major emphasis was on utilizing objects and events in the home for educational purposes. The home visitor was a paraprofessional and was supervised by a professional home visitor.

Instrumentation

The Stanford-Binet, Form L-M, and the DARCEE Concept Test[5] were used in a pre-post design to assess the program effects on the children. The DARCEE Concept Test measures the skills of matching, recognition, and identification which appear to be basic to more complex cognitive development; these are some of the basic kinds of skills emphasized in the home visits. The test consists of 16 sets of stimulus and response cards on which are drawn geometric figures which vary in size, color, shape, etc. The child is asked to match figures ("show me one that is like this one"), recognize figures ("show me the smallest triangle"), and identify figures ("what shape is this?"). Scores are obtained for matching,

recognition, and identification, and identification subtests, as well as for the total test.

The Maternal Teaching Style Instrument (MTSI)[11] was used for all mother-child pairs in a posttest only design. The MTSI consists of one practice and four task cards. The mother is instructed to help her child make his card look exactly like hers, by getting the child to place blocks which vary in size, color, and shape onto his card in the same arrangement as is depicted in drawings on the mother's card. She is told that she may do anything to help the child get the blocks into the proper arrangement except showing the child her card. In this manner, the mother is confined to the class of teaching behaviors, but free to vary within that class, while the child is confined both to, and within, the class of the behaviors of following instructions. In this kind of situation, the only behavior free to vary is the manner in which the mother teaches. Each session was video taped and analyzed later by means of a scoring grid onto which the mothers' responses were sequentially coded. Reliabilities ranged from .81 to .99.[11]

RESULTS

The analyses of covariance for the Binet and DARCEE Concept Test using the pretests as covariates yielded a statistically significant finding for the Recognition subtest of the DARCEE Concept Test ($F = 11.41$, $p < .005$). Further, the experimental group was slightly higher on all of the measures except for the Matching subtest. T-tests between experimental and comparison groups by category on the MTSI were calculated. The treatment mothers gave significantly more Color ($t = 2.33$, $p < .05$) and Shape Cue

Labels (t = 3.97, $p < .01$), and significantly fewer Inappropriate Directions (t = -1.79, $p < .05$). Treatment mothers were higher on most appropriate, positive and cue label categories, but not to a statistically significant extent.

Correlations of race, sex, and summary MTSI variables were also calculated. Summary MTSI variables were obtained by summing group responses for the three appropriate categories, and the five cue label categories. The matrix was found to be significantly different from an identity matrix. An identity matrix contains diagonal elements of 1 and off diagonal elements of 0. Sex (coded as 1 = male, 0 = female) was related to race (r = .72) (coded as 1 = white, 0 = black), indicating a majority of white males in the sample, and to Negative MTSI variables (r = -.56) indicating that mothers of females were more negative. Race also correlated with Negative MTSI (r = -.65) indicating that mothers of black children were more negative in their MTSI responses.

DISCUSSION

In early education intervention programs, immediate gains desired for the children are in the area of development or increase of skills which are needed for a variety of life situations. A method for achieving these goals is to work directly with the child in a preschool setting or in the home. Sustained gains, however, seem to call for the involvement of the mother in more than a minimal way.[1]

Immediate gains for the treatment children were achieved only on the Recognition subtest of the DARCEE Concept Test. It is possible that the limited duration and intensity of the treatment did not allow differential gains on these measures for the treatment children, where a longer period of treatment, or a longer time between pretesting and

posttesting might have resulted in more and greater differences. The adjusted means for the posttest Stanford-Binet and DARCEE Concept Test variables showed the treatment children higher on all but the Matching subtest.

Whatever the immediate gains achieved, it was hoped that treatment mothers could be helped to develop the more appropriate of their teaching behaviors to the exclusion of the more inappropriate ones. DARCEE's approach to training mothers tends to concentrate on getting them to be more positive and less negative, and to focus their children's attention on relevant aspects of the stimuli. The mothers in this study did more labeling of the color and shape aspects of the MTSI cues than did the comparison mothers, and were higher on Positive Task-Oriented Reinforcement (this latter finding was not significant). That the treatment mothers were more positive may also be inferred from the finding that they gave fewer Inappropriate Directions.

As mentioned, a shortcoming of the present study was that its limited time of treatment did not permit as complete development of effective teaching techniques in the experimental group mothers as had been hoped. Twelve hours of in-home treatment, even with the simultaneous practice by the mother between training sessions, seems to be successful only to a limited degree.

By working with the mother-child dyad in the home, it is possible to develop to a limited degree some of the potential of mothers as educational change agents for their children, even in a study of limited intensity and duration. If our goal is to open more options for the child it is necessary that the home environment be able to foster and maintain the skills related to competent performance in the world at large. The present study has shown enough success in this area to provide a firm basis for family-unit intervention in the home.

SUMMARY

The purpose of this study was to assess the effects of a 12-week intervention in 6 black and 9 white low-income homes in order to modify maternal teaching behavior and influence child functioning. Positive changes in maternal teaching style were achieved by experimental group mothers, especially in the area of cue labeling. Significant cognitive gains were achieved by the preschool target children on recognition skills on the DARCEE Concept Test while all other differences were in the predicted direction although nonsignificant. The limited changes in the target children were attributed to the limited duration of the intervention.

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Footnotes

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